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## *SLATE PENCILS—HOW AND WHERE THEY ARE MADE.*

AFTER a careful search through all the works within my reach, including the all-knowing "Appleton," and many others of considerable fame, I was obliged to confess that I had not gained a single fact in relation to slate pencils. Of your numerous readers, probably every one has used a slate-pencil more or less, and knows that there is a hard, black kind, full of grit, and a soft, light-colored one, usually called soapstone; yet I dare say that not one in a thousand knows how or where they are made, or what the difference between them is. The black variety comes from Germany; but the light or soapstone pencils, whether the perfectly round pencils of the present day, or those which we used to get years ago, and which seemed to have been whittled out with a knife, are manufactured from a deposit of stone in the north-west corner of the town of Castleton, Vermont, about eight miles west from Rutland, and about a quarter of a mile from Lake Bomoseen. The tract of country known to contain the stone is very small, being at most only one and a half miles long and half a mile in width. As far as is known, this is the only deposit of rock fit for making pencils of this kind in the world. Every inch of the country for miles and miles around has been searched in vain to find

another outcrop. Probably there is more of the stone in the world, but certain it is that none having just the right grain has yet been found in the United States; and Castle-ton has the honor of being the only place in the world where the pleasant-working soapstone pencil is made.

The light green color, and soft, chalky character of the stone are known to all. Although it is called a soapstone, it is not strictly so. In the beds it seems more like an indurated clay than any thing else; yet it is much harder than clay, and has a grain more like slate, which it resembles very much, splitting readily into plates. Silica and alumina enter very largely into its composition, as well as potash and iron. Although containing more than fifty per cent. of silica, it does not appear to have any grit. The tools employed in cutting it hold an edge nearly as well as in a wood of equal density. The beds "dip" at an angle of about forty-five degrees. The general line of "strike" is north and south.

The stone as it comes from the quarry is split into slabs from one to two inches thick, which are then taken to the factory. This is a large, two-story building with a basement. Upon one side is a wing, constituting the engine-house, where a very fine eighty-horse power engine furnishes the motive-power for the machinery. The stream upon which the factory is situated follows the general direction of the ledges for nearly a mile. Its course has several times been changed to allow quarries to be opened.

The slabs are taken to the first floor of the mill, where they are sawn up into blocks six or seven inches long and four or five inches wide. The saws used are very similar to those used in cutting wood, except that they are not above twelve inches in diameter. From the saws the blocks are carried to the "splitting-table," where workmen, seated upon the edge of the table, split the blocks into plates or slabs about one-third of an inch thick. This is done with a hammer and a thin bit of steel, looking very much like the blade of a carving-knife. The plates are now much thicker than the pencils are to be, and uneven besides. The next thing is to plane them. This is done by two broad knives, like the irons of a carpenter's plane, but much larger.

These are set like a letter  $>$  with a small opening at the point. As the plates enter at the point of the  $>$  the edges cut off all superfluous stone, leaving the slabs ready for the

"*Rounding machines.*"—These machines, though perfectly simple and easily understood, when once seen, are difficult to describe. The problem solved by the machine is to make round pencils from flat plates of rather brittle stone. The essential part of the machine is a series of steel knives made from square bars of steel, the edge or lower side of which is grooved thus :



The plates are forced along beneath this knife or "cutter," which makes a number of grooves upon the surface. About two inches behind this first cutter is a second, set so as to cut a little deeper, and after this another and another, until the plate has been carried beneath eighteen of these cutters, when it comes out looking precisely like a small stone wash-board. As the plates come from this machine, a man sitting at the end of it takes them up and feeds them into a machine exactly like the first, excepting the little tables that carry the stone under the cutters, which are grooved to hold the half-made pencils. As they come from this last machine, boys gather them up and pile them up in boxes upon the elevator. They are then carried into the second story, where they are sawed to the proper lengths. The longest are six inches, the next five, then four, and some three and a half. Though really the cheapest pencils, these shorter sizes do not find as ready a sale as the longer. Three four-inch pencils do not seem nearly as long, to the "ciphering" community, as a single five or six-inch one at the same price. The cutters for the rounding machines, considering their size and the amount of labor expended upon them, are very expensive. They are less than an inch square, and about eight inches long, and have perhaps twenty transverse grooves; and the company pays for them, by the quantity, \$1.90 each.

Sharpening pencils, (by which we do not mean the primitive method of the jack-knife,) though a simple operation, becomes a question of importance when it has to be per-

formed upon forty or fifty thousand per day. The demand for a ready-sharpened pencil has become so great that a machine for doing it rapidly and well has become a desideratum. Several have been tried, but as yet with small success; and at present the pointing is done by holding the pencils separately upon a grindstone.

A new idea, or rather an old one borrowed from the foreign black pencils, has recently been introduced, and the pencils for children's use are often painted in colors. Even older folks know how disagreeable to the fingers is a new pencil, with its coating of dust. The children, however, in particular, chose pencils as they do Sunday-school books, taking the bright-colored ones in preference.

The factory, under the most favorable circumstances, could probably produce from 75,000 to 100,000 pencils per day; though, for various reasons, the number does not usually run above 50,000. The supply of "stock" is unlimited; and, as the demand for the pencils increases, the supply will be made to correspond; so that it is not at all improbable that in time the world could be supplied with pencils from this Vermont factory. The transportation of so small and compact an article forms so trifling an item in its cost, that the retail price is the same everywhere. During the last twenty years, this pencil has driven all others from the California market, and in time will probably do the same for the markets of the Atlantic and Mississippi States. One of the first orders filled by the company was for 30,000 pencils to be carried to South-Africa by an American missionary.

The quarries are situated along the line of the stream already mentioned. On account of the softness of the rock, it is impossible to tunnel into it without expensive timbering, and so wherever it is taken out, the excavation extends from the surface all the way down. Gunpowder is used to loosen and break up the stone, which is then hoisted out, split up into slabs, and *immediately* taken to the mill. Like some slate rocks, if it once becomes dry, or is exposed to the air for any considerable time, it is spoiled. It grows hard and brittle, and will neither split, nor, if split, make pencils. It can, like slate, be kept for a short time if placed beneath the water; but even then its quality is impaired. One of



the most recently opened quarries seems to be beneath the site of an ancient Indian burial place. Human bones, arrow-heads, and flint implements were found in digging through and removing the dirt above the rock.

Were the supply any less abundant, the waste attending the manufacture would be something much to be regretted, since scarcely one hundredth part of the rock taken from the quarry makes its appearance in the form of pencils. There is, in other words, more than ninety-nine per cent. of waste, an amount almost incredible to one who has not watched the process. Mr. Brown, of the pencil-works, having a Yankee's ingenuity, and a Yankee's aversion to unnecessary waste, has devised an excellent use for the unavoidable refuse of this manufacture.

For some years, paper-makers have employed clay to fill the pores of the paper pulp, and give it "body" and a satin surface. But clay is liable to be gritty, and it darkens the paper, so that it can only be used in the darker grades. Mr. Brown has a patent covering the use of ground stone of any kind for this purpose, and commonly called the kaoline or argillite patent. Argillite is the name of the white slate-pencil stone. After the patent was obtained, a set of machinery like that used in flour-mills was put into the basement of the factory, and the dust and waste from the manufacture of the pencils ground to a powder three grades finer than the finest double-extra flour. Being very light in color and free from grit, it can be used in the manufacture of fine white printing-papers as well as letter-paper, so filling the pores that even without sizing it is possible to write upon it, while the surface is like that which has been calendered.

While the patent was pending in this country, and before it was granted, some one found means to get copies of specifications, and obtained a patent upon them in England. The idea met with favor in that country, and at least one paper company searched up and down all England for the argillite; but none was to be found, and they were obliged to send to Vermont for the desired article. In the end, therefore, the fraud only amounted to saving the American company the expense of an English patent.

Owing to the peculiar composition of the stone, it is quite probable that still further useful applications will be found for the refuse.

The stone has been known as a "pencil rock" among the inhabitants hereabout for years; and pencils were occasionally put into the market; but previous to 1846 there were very few. Twenty-three years ago, Mr. H. O. Brown began the manufacture of slate-pencils, getting the stone from this place and carrying it to Rutland, where it was made into pencils by splitting into slabs, cutting into strips by hand with a carpenter's saw, and *whittling* the square strips to a tolerably round shape. When a boy at school, Mr. Brown and his school mates used to think themselves lucky to get a bit of this rock for pencils, and on one occasion he paid ten cents for a piece no larger than his two fingers. He determined to know where the ledge was from which that stone was obtained. Few at that time knew the location. The glen in which the ledge is situated was then hidden in a dense forest. By the merest accident, through some boys he met while hunting for the place, he learned its location. Ten dollars was the result of his sales of pencils made from the bushel of stone which he got at his second visit. During the winter he got out stone enough to make three thousand pencils. The stone was all carried to Rutland, and the pencils made there.

When Mr. Brown first spoke of going into the business, and was making permanent arrangements for it, people sneered at him, asking if making *slate-pencils* was not rather small business. His reply was, "Look here; wouldn't you rather have one of these soft pencils than one of those hard, black, gritty things?" "Yes." "Well, every body is just like you, and will get one of these if he can; and if every body uses them, there must be money in it." And so it proved. After a long struggle with poverty and rival owners, he has succeeded in getting the control of all the pencil-stone under one management, the style of the firm being the Adams Manufacturing Company, named after the senior partner. At present, there are about one hundred hands, men and women, employed in and about the factory by the company.

Near the quarries mentioned is another, in which the stone is of a rich dark purple color. Could any means be found to harden this stone, it would be of the greatest value for making school-slates, as it has every other requisite for a first-class article. PERDIX, in "*Manufacturer and Builder*."

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THE IMPORTANCE OF LEARNING A TRADE.—Why is it that there is such a repugnance on the part of parents to putting their sons to a trade? A skilled mechanic is an independent man. Go where he will, his craft will bring him support. He need ask favors of none. He has literally his fortune in his own hands. Yet foolish parents—ambitious that their sons should "rise in the world," as they say—are more willing that they should study for a profession, with the chances of even moderate success heavily against them, or run the risk of spending their manhood in the ignoble task of retailing dry goods, or of toiling laboriously at the accountant's desk, than learn a trade which would bring them manly strength, health, and independence. In point of fact, the method they choose is the one least likely to achieve the advancement aimed at; for the supply of candidates for positions as "errand boys," dry-goods clerks, and kindred occupations is notoriously overstocked; while, on the other hand, the demand for really skilled mechanics, of every description, is as notoriously beyond the supply. The crying need of this country to-day is for skilled labor; and that father who neglects to provide his son with a useful trade, and to see that he thoroughly masters it, does him a grievous wrong; and runs the risk of helping, by so much, to increase the stock of idle and dependent, if not vicious, members of society. It is stated in the report of the Prison Association, lately issued, that of fourteen thousand five hundred and ninety-six prisoners confined in the penitentiaries of thirty States, in 1867, seventy-seven per cent., or over ten thousand of the number, had never learned a trade. The fact conveys a lesson of profound interest to those who have in charge the training of boys, and girls too, for the active duties of life.—*Manufacturer and Builder*.

*WHO PATRONIZE THE PUBLIC SCHOOLS?*

THIS question has become important in proportion as the system has made inroads upon schools established on other bases. The friends of secular private schools claim that the public schools are established for the poor people not able to pay tuition, and that the wealthy class do not patronize them. The friends of parochial schools, on the other hand, claim that the poorest class of children are not provided for by our system—that, in short, the necessity rests upon them not only to build and support orphan asylums, almshouses, hospitals, insane retreats, etc., but also parochial schools. On this basis they would claim a division of the school fund. That the next step would be the support of the churches direct, by taxation, is evident from the nature of the arguments used by them in discussing the school question. In fact, for the reason that schools under the control of the church are taught wholly, or in part, by the clergy, such a division of the school fund as is proposed is already an appropriation for the Church, and is thus opposed in spirit to the first amendment to the Constitution of the United States, and to similar articles in all the State constitutions.

It is a mistake, on the part of a certain portion of the community, that they wish to thrust upon the public schools the responsibility of the entire education of the child. When told that the State declines to take charge of the religious education of its school children, they allege the inseparableness of secular and religious education, and demand that the State shall proceed to surrender to them the secular part of the education, in order that they may unite with it the religious part in such proportion as they approve. If the lesson of history has taught us anything, it is that the separation of Church and State is the safeguard of individual liberty. Freedom for all to follow the dictates of conscience is the corner-stone of republican institutions. These institutions can never flourish except upon the conviction that the secular itself is of vital importance, and that it embodies enough that is rational to permit its organization as a separate independent whole. Since this

conviction has begun to grow—and its beginning dates back in the thirteenth century—it has been found that every instance of union of Church and State tended to the corruption of the former and the weakening of the latter. For these reasons it has been a settled principle in this country to separate secular and religious instruction far more than is done in Europe, and this principle has prevailed to such an extent as almost to secularize even our parochial schools.

However honest men may differ on the question of the desirability of the union of the Church and State, it is certain that the public school system has been regulated with a sincere desire to respect the feelings and wishes of all. The hours of instruction are limited to five and a half per day for five days in the week, thus leaving the greater portion of every day, besides two days entire each week, for other duties. Since it is the practice, even in parochial schools, to give a separate hour for religious instruction, and not to mix it up with all the other branches taught, it is clear that lessons given in religion outside the regular school hours, are not, in fact, sundered very much more from other lessons, than those given within the school hours of parochial schools, which hold sessions seven or eight hours in length, for the purpose of obtaining the necessary time for both kinds of instruction. Any one acquainted with the workings of schools in general will know that such lessons cannot be so effectual when brought into the regular school course. This will readily appear upon consideration. In the first place, the pupil gets physically and mentally exhausted by the confinement of such long school sessions. If the session is not lengthened, but the time for religious instruction taken direct out of the time for the secular recitations, then, of course, the pupil makes slower progress in the latter. Moreover, the religious teacher is liable to neglect what comes in an extensive routine, and will not concentrate all his energies on the work of religious instruction so fully as when he has that specific task, and nothing else, to perform. Division of labor is the great economical principle. Let the community see to it that our public schools are free from sectarian bias of what-

ever kind, and then the Church, by its appropriate instrumentalities, will best perform its mission.

In the purely secular schools are taught those technical instrumentalities (reading, writing, arithmetic, geography and grammar), *which prepare the pupil not only for practical life, but for religious training as well.* If this is not done beforehand, the religious teacher has to interrupt his purely religious work, and take up the spelling-book and primer, in order to get a basis for the reception and comprehension of his religious instruction. Is it not clear that this interruption weakens and dissipates the forces of the Church, and that what is done in the public school toward giving the pupil a knowledge of elementary branches is so much done to assist the religious teacher and save the strength and resources of the Church?

These considerations are thrown out to present, in its true light, a subject that has been frequently misstated. That all classes of the community support the Public Schools, without regard to the station occupied or employment engaged in, is clear from the following table:

## OCCUPATION OF PARENTS.

Children of agents.....	526
" artists.....	121
" barkeepers.....	445
" boarding-housekeepers and victualers.....	448
" boatmen.....	803
" butchers.....	363
" clerks.....	814
" draymen and teamsters.....	807
" farmers and gardeners.....	404
" day laborers.....	2,623
" laundresses.....	583
" manufacturers.....	1,414
" mechanics.....	4,752
" merchants.....	2,426
" public officers.....	535
" professional men.....	801
" seamstresses.....	628
Unclassified.....	2,654

WM. T. HARRIS, in "*The Journal of Education.*"



ENGLISH LITERATURE.

SECOND PART.

*"It can need no argument to show that the study of our ancient mother-tongue is an important, I may say an essential, part of a complete English education."*

Hon. GEO. P. MARSH.

PERIOD OF ORIGINAL ENGLISH.

A DISCUSSION of our literature previous to the year 1558, involves the consideration of philosophy and the science of language, for, as has been observed, the earlier changes are more marked in the language, while the later growth is apparent in the organic nature of the literature itself.

The science of language, or comparative philology, is of recent development. The idea of using philosophy in philological studies had been expressed by Lord Bacon, but previous to the present century it had not taken a very firm hold upon the minds even of the learned. In 1605 Bacon divided Grammar into two parts—the one literary, and the other philosophical. He conceived the second to be a noble kind of grammar, and said that "if any one well versed in various languages, both the learned and vulgar, should treat of their various properties, and show wherein each of them excelled and fell short—thus languages might be enriched by mutual commerce, and one beautiful image of speech, or one grand model of language for justly expressing the sense of the mind, formed like the Venus of Apelles, from the excellencies of several." He said further, that words are the traces or impressions of reason, and argued that as impressions afford some indication of the body that made them, they are worthy of deep philosophical investigation.

In 1710, Gottfried Wilhelm von Leibnitz strongly urged the study of language upon exact scientific principles; and three years later suggested to Peter the Great that the translation of the Lord's Prayer, the Ten Commandments, etc., into the various languages of his dominion would increase his Majesty's glory, aid the study of language, and

advance Christianity. But Leibnitz, like Lord Bacon, was in advance of his age; and it was not until two generations had passed that his suggestion bore fruit. At that time Catherine II. caused the publication of a comparative glossary of two hundred and seventy-two languages of Africa, America, Asia, and Europe. This awakened much interest, and the study of language has since been pursued upon more scientific principles.

A new impetus was given by Sir William Jones, one of the most remarkable linguists of his day. A thorough student of Oriental literature, he became deeply impressed with the value of Sanscrit as a guide to the scientific knowledge of many cognate languages. He asserted as probable that Latin, Greek, and the Gothic and Celtic tongues originated in it. In 1784 he founded the Asiatic Society, and from that time progress was very rapid in philological studies.

Sanscrit is the learned language of Hindustan, and has not been spoken for over two thousand years. Its name indicates that it is the polished language. It embodies the sacred Vedas, and, in the well-considered words of Max-müller, exhibits the most ancient chapter in the history of the human intellect. Some of the fruits of the study of this venerable tongue are presented in Farrar's *Families of Speech*. It has tended to counteract the too great devotion to classical studies. These had given the mind of Europe a one-sided and injurious development. It has further rendered possible the working out of a true philosophy of history, and has proved "that all those nations that have been most remarkable in the history of the past, and which must be all but universally dominant in the history of the future, sprang from one common cradle, and are closely united by identity of origin and similarity of gifts." The languages in the class referred to are called Indo-European or Aryan, and to it belong the Sanscrit, Teutonic, Slavonic, Celtic, and Romanic tongues, each of which exists in various branches.

About forty years ago, Jacob Grimm laid the foundation for the historical investigation of language in his German grammar, one of the greatest philological works of the age. He also discovered what is now called "Grimm's Law" of

the interchange of consonants in the corresponding words of the different Aryan languages. A simple example will suffice to show this change in the consonants. *Pitar* in Sanscrit became *fadar* in Gothic, *vadar* in Low German, and *father* in English. Nine hundred Sanscrit roots have been found thus appearing with similar permutations in the languages of Europe.

This hasty glance at the science of language must suffice for the present. Further study of it would make it more interesting, and would show its great importance in its literary, philosophical, political, historical, and religious relations.

Let us look over the languages of Europe. We find them in five classes :

I. The *Celtic*, which is now found only in the Highlands of Scotland, the wildest parts of Ireland, the Isle of Man, the mountainous regions of Wales and Cornwall, and Brittany. The Celts led in the early emigrations from the East, and their language, after having crossed over the continent of Europe, is now only found lingering on its extreme western borders, where it is year by year losing its claim to be considered a living speech.

II. The *Romanic*, which is found in Italy, France, Spain, and Portugal. These all originated in the language of the ancient Romans, and exhibit evident traces of their Latin origin.

III. The *Gothic*, which exists in two divisions. The first includes the *Scandinavian* languages, among which are those of Iceland, Denmark, Norway and Sweden. The second includes Frisic, High and Low German, Dutch and English, which are called *Teutonic*.

IV. The *Slavonic*, of which the principal divisions are the Russian and Polish. This class of languages covers a vast extent of territory in Europe, Asia, and North America.

V. The *Uralic*, which is used by the Fins and Laplanders. It receives its name from the Ural mountains, and extends into Asia.

By looking on a map of Europe, we find that the migrations of the nations have pushed the *Celtic* language to the extreme western verge ; that the *Romanic* are confined to

the southern part; the *Slavonic* to the eastern; and the *Uralic* to the northern countries; while the great central portion is occupied by nations speaking the *Gothic* tongues. This distribution of languages is not an arrangement of man, but the fulfilment of a design which has governed the movements of nations for many generations.

The language which we use is described as belonging to the Teutonic division of the Gothic branch of the Indo-European tribe of languages, and the classification we have just made will show us that the description is a true one. We have already learned that the changes in English have been gradual; let us now remember that they not been radical—that the roots may be traced back pure and unmixed through Low German and Gothic to their home in the birth-place of the Aryan language. Max Müller, probably the highest authority on this subject, says: "Not a single drop of foreign blood has entered into the organic system of the English language. The grammar, the blood, the soul of the language is as pure and unmixed as spoken in the British Isles as it was when spoken on the German Ocean by the Angles, Saxons, and Jutes of the Continent."

We are now prepared to enter more particularly upon the study of the earliest expressions of our language. We find them in rude lyric poetry. To this class belongs also the *Rig-Veda*, the earliest of the Hindu writings, and the Book of Job, attributed to nearly the same period, is in Hebrew poetry. So, too, in France, there were the *troubadours*; among the Scandinavians were the *scalds*; the Greeks had their *rhapsodists*, and our forefathers took delight in the song of the *Gleeman*. The office of each of these classes was to publish literature. It is natural that poetry should thus precede prose, because it expresses those sentiments which occupy the uncultivated mind which is not prepared to confine its attention to the reasoning and discussions that, with equal naturalness, are committed to prose.

Let us imagine ourselves in one of the great festive halls of a thousand years ago. The Englishmen before us are ready to join in ale-drinking, and to hear the glee-man's song. The hall is well adapted to its use, being lofty and broad, with arched roof, having hearth-stones and great

wood fires down the middle. We notice the gilded liquor-vats, the benches for the warriors, and the dais for the chief and his thanes, and his wife. The appearance of the bard causes a temporary quiet, and we call upon him to recite our earliest epic poem. Taking an honorable position, he begins the romantic tale of *Beourelf*. He sings of the cruel devastations of a monster, Grim Grendel—how he came forth from the fens and the fastnesses, and killed thethane's boardsharers. Now, pointing southward, he tells of the sailing of a wrough-stem, foamy-neck vessel, bearing Beourelf and his chosen champions to the shore-cliffs and wide headlands of the north. As the stirring song progresses, we see the strong mendelark, their bright ring-shirts clanking and glistening as they come over the bulwarks to the beach. The reception by the warder, the march to the mead-house, the interview with the thane, and the festivities in his presence, the terrific combat between Grim Grendel, whom no weapon could hurt; and Beourelf, whose hand-gripe was that of thirty men—the conquest of the monster by the man—these and many other tales are told us; while the thrumming of the harp stirs the warriors, and causes our own hearts to beat responsive to the romantic stories of the prowess and chivalry of the early Englishmen.

Turning now from the ale-drinkers, let us look upon the sober inmates of the monastery of Whitby, which was in York, not far from the mouth of the river Erke. It is the voice of the humblest of the inmates that we hear, and this is what he sings:

*"For us it is very right that we praise with our words, love in minds, the keeper of the Heavens, Glory-King of Hosts! He is the source of power, the head of all his great creation, Lord Almighty. He never had beginning nor was made, nor cometh any end to the eternal Lord; but his power is everlasting over Heavenly thrones. With high majesty, faithful and strong, he ruleth the depths of the firmament that were set wide and far for the children of glory, the guardians of souls!"*

Let us listen as he continues, and tells of the creation, the fall of the angels, the fall of man, the stories of the patriarchs, the incarnation, the ascension, and of the last judgment. Treating of satan, he gives us a version of his speech when hot thoughts welled within him, as he compared the narrow

place of his punishment with the abode of beauty that he formerly knew, high in heaven's kingdom. Here are the words of the poet giving the supposed language of the arch-fiend:—

*"That is to me of sorrow the greatest that Adam, who was wrought of earth, shall possess my strong seat : that it shall be to him in delight, while we endure this torment, misery in hell. Oh ! that I had the power of my hands, but round me lie iron bonds. I am powerless ! Here is a vast fire, above, and underneath ! Never did I see a loathier landskip ; the flame abateth not, hot over hell. My feet are bound, my hands manacled, so that I cannot with these limbons escape !"*

We are reminded of John Milton, and his *Paradise Lost*, which was published only a few years before the paraphrase of Cœdmon had a second time been brought to the eyes of the world.

The limits of this paper will only admit of reference to two more writers in the period of original English. Thus we shall by no means exhaust the fruit of the literary laborers of the age, because a very large portion was committed to the Latin language which it is not our province to consider. Latin was considered stable, and English was not used upon the continent. Whoever, therefore, wrote for a wide circle, or for other generations, was led to use the Latin language.

Literature in this period reached the highest point in the days of Alfred the Great. He was an author of merit who united to deep patriotism a strong love for the early national poetry. He learned Latin late in life in order that he might bring the works of classic authors within the reach of his people.

Among his translations are the historical works of the venerable Bede, some moral and religious treatises, and the Psalms of David. He was engaged upon the last when he died in 901. In a preface to one of his works, King Alfred says : *"When I thought how the learning of the Latin language before this was decayed through the English people, though many could read English writing, then I began, among other divers and manifold affairs of this kingdom, to translate into English the book which is named in Latin Pastoralis, and in English Herdsman's Book, sometimes word for word, some-*



*times meaning for meaning, as I learned it of Plegmund my archbishop, and of Asser my bishop, and of Grimbold my presbyter, and of John my presbyter. After I had thus learnt it so that I understood it as well as my understanding could allow me, I translated it into English, and I will send one copy to each bishop's see in my kingdom."*

Notice that in speaking of his language and people, Alfred always calls them English—never Anglo-Saxon. The latter term appears first in Asser's biography of Alfred, written about 910, and first published in 1574. The term *Angul-Saxonum* is not used to express the union of Angles and Saxons, but to distinguish the Saxons of England from those of the continent.

The Saxon, Anglo-Saxon, or National Chronicle, which relates the history of Britain from Cæsar's invasion to the year 1154, belongs to the period of original English. The student may be in danger of deriving confused impressions of its importance from the differing opinions which learned men have expressed of its value. Mr. Marsh apparently underrates it, calling it "a dry chronological record, noting in the same lifeless tone important and trifling events, without the slightest tinge of dramatic color, of criticism in weighing evidence of judgment in the selection of facts narrated." Mr. Thomas Arnold considers it by far the most important prose work that has come down to us from the period, and Henry Morley gives it "the first place among authorities for early English history."

The National Chronicle is more full in its record of events after the year 853. It exists in several manuscripts, and it is probable that one writer transcribed and continued the narrative of his predecessor. Thus they not only recorded facts, but exhibited the gradual breaking up of the original form of the language in a most interesting manner. The earliest manuscript ends with the year 891. It is not all prose, but the writer incorporates occasional verse, as under date of 937 when he allows his feelings to break out in a rhythmical account of the "Battle of Brunanburh." This has been called the "Waterloo Ode" of the tenth century, in reference to its record of the most complete and bloody victory that King Athelstane gained over the combined

forces of the Danes, Welsh and Scots. This poem is available for modern readers in a version to be found in "Freeman's Early English History for Children," published by MacMillan & Co., London. This song is attractive, apart from its historic and romantic interest, on account of the expressive words it contains. Among these are "ring-giver," "linden Shields," "Gods-candle," "trysting-place," "battlestead," "war-hawk," "that grey deer the wolf," in the last of which we find an explanation of Shakspeare's line, "mice and rats and such small deer," "deer" meaning "beast," and being the "thier" of the Germans.

Let the student of this period turn to the splendid pages of Scott's *Ivanhoe*, and he will have spread before his enraptured view the old English feasting-halls, the pomp and picturesqueness of chivalry, thrilling pictures of life in its light and dark aspects, and he will mark, as some one has said, the tendency to fall into habits of indolence that inhered in the emigrants from the plains of Holstein, and the barren forests of Hanover, which all the stirring scenes of this warlike era could hardly countervail. Thus the pen of the master may cast a bright light upon the past which will scatter its mists, and bring to our view the real life of the early ages in our fore-fathers' homes. Thus the study of ancient letters will be enlivened by the realistic charms of the historical novel, the true English spirit implanted in our nature, and our minds will be expanded as this literature of power finds a welcome to our understandings and to our hearts!

We have now seen the beginnings of our literature. In the National Chronicle we observed some of its more substantial traits; in the epic of Beowulf we marked the breathing forth of the spirit of romance; in the labors of King Alfred we were pointed to its traits of patriotism; in writings of Cædmon that strong religious element which appears to underlie so much of the writing in our language became exultant and almost sublime; while in all of it we have been struck by a clear utterance, an elevated aim, a well-defined purpose, and a strong heart-power, traits which we shall be able to trace all down the centuries as we progress in our fascinating work!

ARTHUR GILMAN.

*IN SCHOOL DAYS.*

**S**TILL sits the schoolhouse by the road,  
A ragged beggar sunning ;  
Around it still the sumachs grow,  
And blackberry vines are running.

Within, the master's desk is seen,  
Deep scarred by raps official ;  
The warping floor, the battered seats,  
The jack-knife's carved initial—

The charcoal frescoes on its walls,  
Its door's worn sill, betraying  
The feet that, creeping slow to school,  
Went storming out to playing !

Long years ago a winter's sun  
Shone over it at setting ;  
Lit up its western window panes,  
And low eaves' icy fretting.

It touched the tangled golden curls,  
And brown eyes full of grieving,  
Of one who still her steps delayed  
When all the school were leaving.

For near her stood the little boy  
Her childish favor singled,  
His cap pulled low upon a face  
Where pride and shame were mingled.

Pushing with restless feet the snow  
To right and left he lingered,  
As restlessly her tiny hands  
The blue-checked apron fingered.

He saw her lift her eyes ; he felt  
The soft hand's light caressing,  
And heard the trembling of her voice,  
As if a fault confessing.

" I'm sorry that I spelt the word ;  
I hate to go above you,  
Because "—the brown eyes lower fell—  
" Because, you see, I love you !"

Still memory to a gray-haired man  
That sweet child-face is showing :  
Dear girl ! the grasses on her grave  
Have forty years been growing !

He lives to learn, in life's hard school,  
How few who pass above him  
Lament their triumph and his loss  
Like her—because they love him.

J. G. WHITTIER.

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*VISIBLE SPEECH.*

**S**PEECH is thought that can be heard; writing is speech that can be seen. As the mind, once accustomed to a process, fails to recognize the steps which compose it, writing becomes, to those who read it with facility, visible thought. Thought is rendered visible also by another process called hieroglyphic, which attempts to delineate thoughts by forms which suggest the idea without regard to the vocal sounds used to convey it to the ear.

It is singular that these two modes—the direct or ideographic, and the indirect or phonographic—tend to exchange their natures. Whether or not we think in words, it is certain that words greatly influence our thoughts, so that the pictures or signs of hieroglyphic writing follow the order of spoken sentences, and gradually come to represent not ideas, but words. The language of deaf-mutes exhibits a similar phenomenon. After they have learned to read and write our ordinary characters, their sign-language becomes so conventionalized that their signs to some degree represent words; and we have the strange fact of sound affecting the mode of communication of those to whom sound is an unconceivable thing. On the other hand, we find that in alphabetic writing sound is lost sight of to some extent. Sentences are written which would never be spoken, and can scarcely be read; distinctions are made where none exist in vocal speech, and old distinctions are kept up in writing for centuries after they have ceased to exist in sound.

Thus ideography becomes phonography, and phonography becomes ideography, or rather both approach a middle form—logography as it may be called, in which

words, but not their component sounds, are expressed by separate signs.

The tendency to lose sight of sounds makes us indifferent to the perfection or imperfection of our system of sound-writing, and, like everything else which is neglected, the system is very bad.

The Saxon race is very indifferent to sound, and most occupied with thought ; hence, as it has the disadvantage of a mixed language and a writing system, combining heterogeneous elements put together by unlearned hands, it possesses to-day, although the most intelligent of the races, the worst system of alphabetic writing in the world.

Every foreigner (except Frenchmen, who are almost as badly off,) is surprised to learn that we spend so much of our school-life in learning to spell. "Why, after learning the sounds of the letters, don't you just put them together into words?" My friend, the letters haven't any particular sounds, and the sounds haven't any particular letters. We learn to distinguish the letters by names, which do not sound as the letters ever do ; then we learn all the words, chanting the names first as a sort of invocation to Fortuna to help us hit the right sound. We have some help from analogy, but in many cases as much hindrance—as in the words *though, through, thought, tough*.

As the English race has sinned most in the matter of bad spelling and an incomplete alphabet, so it ought to take the lead in restoring the science of alphabetics to a form which shall be perfectly and completely phonographic.

It is true that the thought is the important thing, and the sound but its interpreter ; yet it needs no argument to prove that the sound has a value of itself, and must not be neglected. Any system of writing professedly based on sound which does not represent sound fully, precisely, unmistakably, philosophically, is one of which, in the present state of science, we ought to be ashamed.

One enormous piece of sophistry has been mistaken by many for an argument in opposition to the reformation of our spelling, viz.: the assertion that the spelling by sound would obscure the history of words. Suppose, Archdeacon Trench, you wished to trace the history of the development

of the form of ships; what a help it would be if all the artists from the time of the deluge had conservatively retained the shape of the ark as a type of naval architecture—making arks of the trireme, the junk, and the monitor, for fear of “obscuring the derivation” of them all!

The argument referred to, presented in its most favorable light, is this: letters which have once been pronounced should be retained after they have become silent, in order to point us back to the original, uncorrupted form. Now, we who desire a reform of orthography, do not intend to burn up all the books hitherto printed; all the light which the present spelling can throw on the history of words will still be available. Some of this light however is, to make a novel comparison, of the Will-o'-the-wisp kind, serving merely to lead astray.<sup>1</sup> But allowing, as we do freely, that the silent letters give us much useful information in regard to the origin of words, how much more would we have if we could reproduce the sound of every page of ancient English and hear it spoken as the author spoke it? Then we should know not merely the original form under which the word came into the language, but *every* change it has undergone, with the time when, and the influences under which, each change was made.

But why has this reform,—so salutary, so needful, and labored for by so many,—why has it not succeeded?

Because the projected alphabets have been based for the most part, not on as thorough analysis of all sound, but on the plan of eking out the Roman alphabet with supplementary signs for such additional sounds as can be empirically discovered in our own and the best known foreign tongues. The motive of this plan was a good one, viz.: to make the new alphabet acceptable to the masses and insure its speedy introduction. This experiment has failed. The reform must begin above and work down. The masses see in these new methods of spelling nothing but what a false education has taught them to call “bad spelling.”<sup>2</sup>

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<sup>1</sup> As in the word *could*, where illiterate printers have inserted the *l*, on a supposed analogy with *would* and *should*, the roots *will* and *shall* have an *l* by good right. Let us keep the three letters *oul*, where there is but one sound, they serve such an excellent purpose in pointing out the root *can*!

<sup>2</sup> The best way to spell “know” with our present alphabet is “no,” but that is bad spelling.



To use the Roman alphabet in any form as a basis of the alphabet of the future, is not only distasteful to the people, but unsatisfactory to the learned, from its arbitrary character, and fatal to the universality of the system, for if one language be taken as the basis it will be unsuitable to all the rest, and, if a compromise be possible, the result will be unacceptable to all.

No, it is time to discard the idea of a new alphabet based on any of the old ones and to found one on the physiological laws of speech, which are the same in every country and in every language. A Chinaman's mouth and an Irishman's mouth contain just the same machinery for producing sound, and any sound made by the one is possible for the other. If you doubt this, recollect that a child of any nationality brought up in this country pronounces every English sound correctly. The only reason why adults cannot learn foreign sounds well is that they have partly lost, by disuse, the command of certain muscles of the mouth.

The classification of the sounds of the voice must be the first step in framing a philosophical alphabet. A great mistake in this respect has been too great reliance on the ear. Authors have tried to describe sounds by the effect on the ear, using metaphorical terms, such as "hard, soft, blunt, sharp, etc.," which are of no use whatever as a guide to producing the sound. Sounds should be classified *by the way they are made*. When we have done this, observing patiently, in others' mouths and in our own with the aid of a looking-glass, *how* sounds are made, we have at the same time the most perfect classification of the sounds as they appear to the ear. When we have constructed an alphabet on the basis of this classification, the pronunciation can never be lost, for every element will be a "word of command," (to use the expression of Mr. A. J. Ellis,) telling us what to do to make the sound.

Mr. A. MELVILLE BELL, of England, a distinguished teacher of elocution and pronunciation, and a successful curer of defects and impediments in speech, has solved the great problem. He has made an analysis of the actual and possible ways in which the vocal organs can act to produce sound, which if not the only possible or the best classification

is at least exhaustive and capable of assigning a place to anything which the voice can utter. Next, following the true method, he has invented a nomenclature which describes any given sound by indicating the organs used in uttering it, and what those organs are to do and how they are to do it. Lastly, he provides a system of notation which combines in one symbol, which is neat and practicable, all the landmarks of the nomenclature, so that every sound has its perfect representative.

This system has been subjected to some wonderful and hitherto unheard of tests. Among those who have tested it, is Mr. Alexander J. Ellis, whose name stands high among those of English scholars and first among those of English phoneticians; to whose able services in this branch Max Müller bears testimony. Mr. Ellis is the author of many works on phonetics and of an alphabet, which he himself hopes to see superseded by Mr. Bell's.

The test was this: Mr. Bell's two sons, who, under the tuition of their father, have become expert in the use of the new system, left the room. During their absence, the inquirers dictated to Mr. Bell any words or sounds they chose, in any language, or in no language, sense or nonsense, with any conceivable dialectic or peculiar pronunciation. Mr. Bell imitated the sounds until the proposer acknowledged them to be correct; he was then able, by the use of his new invention, to write them down with such accuracy that his sons on being recalled pronounced every word exactly as it was first spoken.

We shall give, in our next, a sketch of Mr. Bell's classification, nomenclature and notation; and we have no doubt that our readers will accept the correctness of the title claimed for it—VISIBLE SPEECH.

C. E. SPRAGUE.

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A NEW OIL.—A new salad oil has been introduced at Hamburg, and promises to be a great success, many people preferring it to Lucca; while it has the advantage for the consumer of being considerably cheaper. It is pressed from the seeds of the beech-tree, the pods of which fall in abundant quantities in the extensive forests of Holstein and Mecklenburg, and have hitherto only been used for fattening swine.

*THE EDUCATION OF THE HAND.*

PEOPLE, with a few unfortunate exceptions, have each two hands. We should not mention this fact, were it not that in the education of youth, only one seems to be generally considered. Children are told to hold their knives in their right hand when cutting their food, and, when the necessary operation is completed, to lay them down and use their forks while eating, still employing the right hand. The only further instructions they receive in regard to the left hand is to keep it clean in common with the right hand, and not to get into the habit of thrusting it into their pockets. They are taught that whenever one hand only is required, the preference is to be given to the right. Thus the left hand is, with the large majority of people, a comparatively useless member, employed only to supplement the other in all manual operations. Without pausing to inquire into the origin of this senseless custom, it is sufficient for our purpose to say that it has no foundation in the anatomy of the hand, or in any natural peculiarity of the human mind. As well might we teach children to hop about on the right foot, to keep the left eye closed, and to stop the left ear with cotton, as to teach them to magnify the value of the right hand at the expense of the left. Nor, in renouncing this absurdity, would it be necessary to the late existing social conventionalities. The fork may be held in the right hand while eating, and the knife may take its place in the cutting of food. These are small matters, observed only for conventional reasons. What excuse can there be for neglecting the early and careful instruction of both hands? We are not speaking of an impracticable thing when we say it is impossible to rear children so that whatever one hand can do the other may do equally well. We know this has been accomplished in many notable instances, where the disability of the left hand has been rectified in spite of all obstacles arising from bad habits acquired in childhood. We have seen surgeons transfer an instrument from one hand to the other during an operation whenever convenience required it, without the

least awkwardness. We have seen draftsmen using both hands in coloring drawings—an immense advantage both to rapidity of work and evenness of shading. We have seen woodmen chop timber “right or left-handed,” and one carpenter who used to hammer or saw with either hand with equal facility. In all these cases the use of the left hand in common with the right gave very much greater efficiency.

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### *SCHOOL APPARATUS.*

THE blacksmith, the carpenter, the tailor, the mechanic of whatever calling, is not—so far as accomplishing anything is concerned—any better off for his knowledge, unless he has at the same time suitable tools to work with. And so it is in teaching; the teacher must have certain school-room apparatus, certain tools to work with, if he is to accomplish what is expected of him. Yet how seldom is it that he is provided with the proper instrumentalities for carrying on his work. He may, indeed, “understand all mysteries and all knowledge;” and yet, as a man understanding all these but without “charity” is “nothing”—so the teacher understanding all these, but without suitable school-room apparatus, is “nothing,” or the next to nothing.

Time was when it was scarcely dreamed that the teacher required anything in the way of apparatus, as we now understand the term. He entered upon his duties without any resources whatever, except a few imperfect and now happily obsolete text-books and his own mental acquirements. The raw material of youthful intellect was given into his hands to be shaped into a form of beauty and excellence, and yet the teacher was expected to effect this without instrumentalities, without apparatus—to make bricks without straw! As well almost might the smith be required to forge a chain, or the carpenter build a house, without the proper implements to work with.

It was a long step in the right direction when blackboards were first introduced. It was such an innovation upon the

ideas of the educational antediluvians, that in many localities it is not even yet recognized as a necessary adjunct to good teaching; and school-houses in which the blackboard is still wanting are not difficult to find. But the blackboard has been introduced as a general thing into our schools, and wherever there is a live teacher, it is considered a *sine qua non*—an essential to school-room success.

With the introduction of the blackboard has been inaugurated a new system of teaching. The competent, wide-awake, conscientious teacher finds a constant use for the blackboard. Good use can be made of it in imparting instruction in every branch of common-school study. Its uses are so many, and its advantages so manifest, that we cannot stop to discuss them.

Crowding close upon the introduction of the blackboard, came cards for teaching spelling and elementary reading. Close upon these, again, have come outline maps, charts, etc. The custom of providing these things, however, is still more honored in the breach than in the observance. In addition to these, globes, orreries, and so on, are found in many schools, though not in nearly so many as they should be found.

Teaching with apparatus—by means of tangible objects or representations—has come to be almost the sole practice. The smallest children are taken in the *Kinder-Garten* establishments, and taught to perform wonders with blocks, wands, scissors and paper. In schools a little more advanced objects are examined, analyzed, and explained; and in institutions of every grade the old-fashioned system of instruction—learning words without meaning—is passing rapidly away. The result is, that while the rising generation has less of that parrot-like knowledge of *words* which the old system produced, it has a more thorough, useful, and practical knowledge of *things*. "I love the young dogs of this age," said old Dr. Johnson, on one occasion, "they have more wit and humor and knowledge of life than we had; but then," added he, "the dogs are not so good scholars." We think "the young dogs of this age" have, as we said above, a more thorough, useful, and practical knowledge of things, and are at the same time quite as "good scholars" as

the children of the generations past. This is owing alone to our improved methods of instruction.

It is an important part of the duty of those who have charge of our schools to provide them with suitable apparatus. Houses and teachers are indispensable; but good apparatus is scarcely less so. Let our teachers have proper implements to work with—then we may reasonably expect work to be done.

T. J. CHAPMAN.

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### HEALTH OF SCHOOL CHILDREN.

THE Medical College of Middlesex, Massachusetts, having for a long time considered the influence of public schools on the health of children, authorized the publication of the following facts as the opinions of its members:

1. No child shall be allowed to attend school before the beginning of his sixth year.
2. The duration of daily attendance—including the time given to recess and physical exercises—should not exceed four and a half hours for the primary schools; five and a half for other schools.
3. There should be no study required out of school—unless at high school; and this should not exceed one hour.
4. Recess-time should be devoted to play outside the school-room—unless during stormy weather—and, as this time rightfully belongs to the pupils, they should not be deprived of it except for serious offenses; and those who are not deprived of it, should not be allowed to spend it in study; no child should ever be confined to the school-room during an entire session. The minimum of recess time should be fifteen minutes each session, and in primary schools there should be more than one recess in each session.
5. Physical exercise should be used in school to prevent nervous and muscular fatigue and to relieve monotony, but not as muscular training. It should be practiced by both



teacher and children in every hour not broken by recess, and should be timed by music. In primary schools every half hour should be broken by exercise, recess, or singing.

6. Ventilation should be amply provided for by other means than by open windows, though these should be used in addition to special means during recess and exercise time.

7. Lessons should be scrupulously apportioned to the average capacity of the pupils; and in primary schools the slate should be used more and the book less; and the instruction should be given as much as possible on the principle of "object teaching."

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#### SORROWS OF CHILDHOOD.

THE Rev. T. De Witt Talmage, of Brooklyn, in a recent address, described the sorrows of children:

I deny the universal proposition that childhood is the happiest part of life. What with breaking your best top, and having the boy next to you stick pins into you—under the most favorable circumstances, it is the least comfortable portion of human existence. We do not understand the sorrows or perplexities of childhood—those days of bad colds without the alleviation of pocket-handkerchiefs; the days of examinations when the unhappy youth, perhaps, in awful presence, is told to "Parse the first page of 'Young's Night Thoughts,'" and when prepositions, adjectives, verbs, articles, and conjunctions get into a grand riot worse than the Fourth Ward on election day. Well do I remember the unhappy scene of my childhood's educational experience. It was called *Herod's School-House*, partly because a man of that name lived not far away, and partly because it was "*The Massacre of the Innocents*." We went to school there from eight o'clock in the morning to five o'clock in the afternoon, and a boy got the worth of his money. There was none of your nonsense of blackboards, globes, and philosophical apparatus. It was sober business, and no trifling. There were the wooden desks around the wall, and seats with no backs to them, and there we sat all day with our faces to the wall; and along about four o'clock of a summer's afternoon we would begin to forget our educational

*advantages*, and get drowsy, and then the teacher would come around very slyly and with a big stick bring us instantly back to an appreciation of our educational advantages. And when we learned our A B C's, *we learned them!* I remember the whole process. "What letter is that?" "I d-o-n-'t know." (Cuff.) "What letter is that?" (higher key.) "I d-o-n-'t know." (Cuff, cuff.) (Tremendous applause). I remember all about it. It was a most serious thing under the best circumstances. And one day, too, a most awful circumstance occurred: Word came to the teacher that Joe Smith had actually kissed Mary Brown! Actually kissed her! and that teacher arose in his indignation, and didn't Joe Smith take it! Why shouldn't that teacher be filled like a vial of wrath at such a thing? He had never kissed anybody! Nobody had ever *kissed him!* But it did no good; for fifteen years later, a minister stood within the altar, a bridal trail swept down the aisle, and there, in the presence of the world, *Joe Smith kissed Mary Brown!* None of the sorrows of childhood about that!

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### SCHOOL-ROOM DISEASES.

**D**R. R. VIRCHOW, of Berlin, Prussia, has made a careful investigation into the diseases caused by the neglect and ignorance of school officers. He has published an interesting and elaborate paper, at the end of which he sums up the chief causes of school-room diseases as follows:

1. The air of the school-room, the condition of which is dependent on the size of the room, the number of pupils, the heating arrangements, ventilation, dampness of the floor and walls, dust.
2. The light of the school-room, dependent on the location of the building and the room, size of windows, color of the walls, artificial means of lighting a room, (gas, oil).
3. The arrangements for sitting, size and form of chairs and desks, length of time scholars are obliged to sit still in one position.
4. Bodily exercises, especially out-door games, gymnastics, bathing, arrangements for such, manner of superintending them.
5. Mental exercises, extent, manner in which they follow each other, individual measure, length of free time and vacations, etc.
6. Punishments, particularly corporal punishments.
7. Drinking water.
8. Privies.
9. School apparatus, especially text books, (size of print, etc.)

Many of the questions agitated are, of course, more of a pedagogical nature, for example, what may be demanded of a scholar, what text-books are to be used, in what manner the free hours and vacations are to be distributed, etc. But many even of these questions will only be solved correctly if school men and medical men will go hand in hand. Only by thus working harmoniously together, by thus mutually enlightening each other, will the State gain an organ to which may be safely intrusted the solution of the great question of our time, viz., bodily and mental health, and development of future generations.

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#### CONDENSED HISTORY OF STEAM.

ABOUT two hundred and eighty years B.C., Hiero, of Alexandria, formed a toy which exhibited some of the powers of steam, and was moved by its power.

A.D. 450, Anthemius, an architect, arranged several caldrons of water, each covered with the wide bottom of a leather tube, which rose to a narrow top, with pipes extended to the rafters of the adjoining building. A fire was kindled beneath the caldrons, and the house was shaken by the efforts of the steam ascending the tubes. This is the first notice of the power of steam recorded.

In 1543, June 17th, Blasco D. Garoy, tried a steam-boat of 209 tons with tolerable success, at Barcelona, Spain. It consisted of a caldron of boiling water, and a movable wheel on each side of the ship. It was laid aside as impracticable. A present, however, was made to Garoy.

In 1650, the first railroad was constructed at Newcastle-on-Tyne.

The first idea of a steam-engine in England was in the Marquis of Winchester's *History of Inventions*, A.D. 1663.

In 1710, Newcomen made the first steam-engine in England.

In 1718, patents were granted to Savery for the first application of the steam-engine.

In 1764, James Watt made the first perfect steam-engine in England.

In 1736, Jonathan Hulls set forth the idea of steam navigation.

In 1778, Thomas Paine first proposed this application in America.

In 1781, Marquis Jouffroy constructed one in Saone.

In 1785, two Americans published a work on it.

In 1789, William Tymington made a voyage in one on the Forth and Clyde Canal.

In 1802, this experiment was repeated.

In 1782, Ramsey propelled a boat by steam to New York.

In 1783, John Fitch, of Philadelphia, navigated a boat by a steam-engine on the Delaware.

In 1793, Robert Fulton first began to apply his attention to steam.



### *EDUCATIONAL INTELLIGENCE.*

**N**ORTH CAROLINA.—As required by the Act to provide for a system of Public Instruction, ratified April 12th, 1869, the Board of Education, and the Supt. of Public Instruction, proceeded to organize a system of Public Schools throughout the State. The report of the Superintendent, Hon. S. S. Ashley, presented November 1st, 1869, shows what progress has been made. In the six months which the report covers, much has been accomplished, though the work has been for the most part of a preparatory nature. The school law has been circulated; county examiners have been appointed; and a census of children between the ages of six and twenty-one years, has been taken. The whole number of school children in the State as reported, is 330,581, of whom 106,766 are colored. The number of school houses is 1,906; of these 178 are characterized as good, and 685 as bad. The sum of \$165,290.50 has been apportioned among the several counties, being about fifty cents per census child. The pecuniary condition of the State did not allow a larger appropriation

for 1869, but it is hoped that "better times will be met with more liberal devisings." The report contains an account of the colleges, academies, and educational associations of the State, and also, a very interesting special report by Rev. J. W. Hood, which gives a satisfactory view of the educational work among the colored population. Considering the difficulties in his way, the State Superintendent is to be congratulated upon his success, and the progress of school matters generally.

MINNESOTA.—The Tenth Annual Report of the Superintendent of Public Instruction, gives the following statistics: The number of districts is 2,521, of which 144 do not report. The number of children between 5 and 21 years, is 144,414, of whom 74,664 are males, and 69,750 females. The whole number of persons attending school is 102,086—29 per cent. not being in attendance. In 1868 the non-attendance was 37 per cent. of all the children. This decrease of 8 per cent. is peculiarly gratifying, because it shows that the public schools are increasing in usefulness and popular favor. The number of winter schools is 1,793; summer schools, 1,982. The number of male teachers employed during the year, 1,155; number of female teachers, 2,620. The relative increase of the male teachers has been greater than that of the female. The average wages of teachers per month—males, \$34.20; females, \$21.92. The number of school houses erected, 258, at a cost of \$242,039.03. The total school expenditure of the year, \$823,571.82, of which \$360,697.50 was for teachers' wages. In no former report have so many evidences of progress been indicated. An increased school attendance; more months of school taught; teachers of better qualifications called for, and at work; and a continued multiplication of neat and well-furnished school houses, constitute the best possible evidences of improvement, and show that Minnesota is making good progress. The three State Normal Schools are in a flourishing condition, and are exerting a powerful influence throughout the State.

OHIO.—The State Superintendent reports an increased educational activity in the State during the past year. The

proportion of children growing up in entire ignorance of the elements of school education has greatly diminished. The number of school officers in the State is 39,901; the number of school-houses, 11,404; the cost of buildings erected in 1869, \$1,874,118; the total value of school-houses and grounds, \$12,462,700. The number of teachers employed, 21,626—12,455 being ladies, and 9,171 gentlemen. The average wages of teachers—males, \$55 63; females, \$33 26. The number of districts in which teachers "boarded round," 2,025—a decrease of 243; so this number becomes "fine by degrees and beautifully less." The whole number of schools is 11,714, of which 198 are high schools. The decrease of 69 in the total number of schools indicates a healthful tendency towards a much needed consolidation and thorough grading of the schools of the State. The Report contains many valuable suggestions, and abounds in statistics well arranged and unusually full and complete.

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### CURRENT PUBLICATIONS.

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THE latest work on Elocution<sup>1</sup> is what it professes to be, "a discussion and delineation of the subject of Elocution." The "Introductory chapters" contain both an able defense of the utility of the art of Elocution, and incitements to the study of it in our schools and colleges; they also call attention to its uses, influences, and effects; and defend the position taken by the author, maintaining the propriety of greater attention being paid to Elocution as one of the most important branches of education, by placing before us as special exemplars of its usefulness and excellence, the philosopher Socrates, and our Saviour, Jesus Christ.

The treatise proper is divided into two parts. The first exhibits and explains "The Sources of Power in Delivery;" the second, "The Elements of Power in Delivery." By

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<sup>1</sup> Elocution: The Sources and Elements of its Power. By J. H. McIlvaine. 8vo. pp. 406. New York: Charles Scribner & Co.



this arrangement the student is placed before the audience first, and taught how to speak afterwards. This is objectionable and might with advantage be reversed. In this case the definitions of articulation, accent, pronunciation, etc., would precede those of power, feeling, earnestness, consciousness, attention and sympathy, mastery of the subject, vitality and self-control. This, it is contended, would be a more natural order of arrangement, for, it is manifest, that a pupil ought to acquire a knowledge of letters, words, and tones, before aiming at a mastery of subjects, and the proper methods of exhibiting that "mastery" to a public audience.

The principal error of the book is its discursiveness. It treats often of matters not strictly pertaining to the business in hand. In some cases Prof. McIlvaine, like a too willing witness, proves too much. The following extract from page 80, under the heading of "The Sources of Power—Feeling"—is given to substantiate this:—

"§41. The fourth and last means of exciting the requisite feeling is the formation of a right moral character.

1. *Virtue is not essential to all forms and degrees of eloquence.*

2. *But virtue is essential to the highest eloquence on moral and religious subjects and occasions.*

3. *The feeling which is requisite to the preaching of the gospel with power, is to be sought in prayer for the influences of the Holy Spirit."*

Of these it may be said that comment No. 1, stultifies the whole section. No. 2 must consequently apply to matter rather than manner; and No. 3, though excellent advice, is out of place in a work destined for classes in schools and colleges. These comments by fair deductions from the text would read thus:—

1. Play actors and lawyers are not indebted to virtue for their eloquence.

2. Clergymen are.

3. Excellence in pulpit oratory is to be obtained by prayer, etc., in which case Prof. McIlvaine's work is unnecessary. With the remembrances before us of Sheridan, Clay, Webster, the elder Kean and the elder Booth, with sorrow

we declare our belief, that, if moral character and toddy were to present lists of candidates, of the 19th century, to contend for the prize in Elocution, the numbers and oratorical merits of the partizans of the latter would succeed in obtaining it.

"'Tis true, 'tis pity!—Pity 'tis, 'tis true."

No one disputes the excellence of laws urging the formation of right moral characters. It is good to be honest, but with Dr. Caius we ask—"What shall the honest man do in my closet?" Has moral character anything to do with the proper delivery of an oration? It is submitted that in comment No. 1, Professor McIlvaine has himself answered this question in the negative.

Composition in prose or poetry is first cousin to Elocution, and Butler tells us in *Hudibras*—

"That all a rhetorician's rules  
Teach nothing but to name his tools."

If this be the case with composition, how is it as regards Elocution, which is far more subtle and etherial? The wild woods have their orators. Many an Indian Demosthenes has moved his countrymen to pity or revenge. Where did they learn Elocution? They had no written rules, not even a written language in many eminent instances. It is true with us, who lead more artificial lives, rules and mathematical education are the orders of the day. But it seems cruel, if not impossible, to bind "the dainty Ariel" with chains. It is submitted that intense study and practise are requisite to form both poets and orators, but it is questioned whether the "stars" of either are made by rules. Rules would produce similarity, whereas great artists commonly differ. Booth and Fechter present two varying portraitures of Hamlet, yet each is followed by thousands, if not tens of thousands of partisans. But if we must have laws for perfecting us in Elocution, we demand that they shall be few in number, and not needlessly intricate. We complain that many of the rules in Prof. McIlvaine's work are painfully precise—giving these in corroboration:

From page 208, on "Articulation":

(1.) The tonics should be carefully rendered with the precise distinctions between those that are most nearly alike.

(2.) The subtonics should be formed with as full a vocality as can be given them.

(3.) The atonics, with no vocality at all, *i. e.*, with the non-vocalized or whispering breath.

(4.) The hard, soft, or feeble checks must be carefully formed, with the exact position and action of the organs, with the precise degree of contact required by each class, so that the vocal or whispering breath may be perfectly stopped off, or partially, or very slightly checked.

(5.) The nasals and sub-nasals require to be practised on with special reference to the resonance of the voice in the nasal cavities, and to the different resonance in the two classes, as being in the former class along the whole line of these cavities, and in the latter confined to that portion of them where they open into the mouth.

It is submitted that these two latter instructions will be somewhat difficult for students to follow; boys reading them would be apt to say an ounce of practise is worth a pound of theory. It is admitted that the three rules given first are simple and useful.

Or, take the chapter on "The Vocal Organism," page 181, which is a mine of anatomical profundity. Minute descriptions are given in it of the diaphragm, the lungs, the bronchial tubes, the trachea, the larynx, the vocal chords, and the mouth. Even the "ear" is described as one of the principal vocal organs. Shakespeare tells us in "Troilus and Cressida" that "the foot speaks," and consequently we feel thankful that the professor did not take us down to the toe nail. Dickens's barber told the coal-heaver, "he did not shave gentlemen in that business—he drew the line at bakers." In vocal organization we draw the line at the "ear." Far be it from us to assert that the definitions given in this chapter are not anatomically correct. Our question is, are they necessary? It is not believed that when Demosthenes put the pebbles into his mouth he concerned himself much about the names and situations of the organs he meant to barricade.

Under "Pronunciation" may be recognized the inevitable long lists of words, and occasionally detected traces of the same kind of extra knowledge, against which a protest has been entered. The following selection on the nasals *m*, *n*, *ng*, *nk*, page 275, is quoted in exemplification.

"In all these sounds except *nk* there is a perfectly free escape of the vocalized breath through the nostrils. Hence their vocality is nearly equal to that of the tonics themselves, and, with the above exception, they are capable of performing all the functions of tonics in the formation of syllables. This capacity is much more fully exhibited in some other languages than it is in English. In that interesting family of African tongues, called the Kaffir or Nilotic, which are spoken by all the African tribes south of the Mountains of the Moon, these nasals form syllables by themselves quite as frequently as the tonics. Thus, in the Bakéle and Mpongéve dialects, *mpáka*, *mpága*, *gift*—*ntóthi*, *ntóno*, *breast*—*ngúba*, *ngúwa*, *shield*. This is also the case in some islands of the Pacific."

Here and elsewhere there is too much "Africa and the Islands of the Pacific" for a work of this nature, although such information might, in one sense, be serviceable; for, if the natives of Bakéle and Mpongéve want nasals, we can with advantage export a few occasionally from our schools in the New England States.

Of course half the teachers in the Union can find faults in this chapter on Pronunciation, and very probably will. Professor McIlvaine may take comfort in the thought that the same would have occurred if the archangel Michael had written it. The fact is, correct pronunciation cannot be accurately and exactly expressed by letters having different sounds. The public would deny that "psalm" is pronounced "sam;" and if "cat" in polite circles is twisted into "cyat," a retreat upon "puss" is desirable.

No reflections can justly be made, except pleasant ones, on the succeeding chapters of part second—they all contain well-arranged and well-considered instructions. Those on the Qualities and Powers of the Voice are more elaborate than those on Emphasis and Gesture. As to the first part of the work, it is all commendable. We have read it with

pleasure and profit, and have no hesitation in asserting that the close study of it will amply repay any youth who desires to train himself for the bar, the bench, the pulpit, or the platform.

CARL GUTZKOW, one of the most prominent among German writers, has just published a novel under the title "The Sons of Pestalozzi," which, according to the unanimous verdict of the German press, ranks among the most remarkable works of fiction lately published in that country. While the narrative is of the most thrilling interest, the author has interwoven with it a review of all EDUCATIONAL systems from Jean Jacques Rosseau down to the present time. The failure or success of these systems, their strong and weak points, their fallacies or promises for the future, are presented in such a manner as to form the dramatic development of the very events on which the narrative is based. The plot and its gradual complication keep us in breathless suspense from the first to the last. The principal persons engage our deepest sympathy—we feel, hope, and despond with them. We see the hand of Fate hanging over each, and fear from moment to moment an awful catastrophe. And yet we may consider the whole narrative as a mere frame, containing a faithful picture of the whole social, religious, and intellectual life of Germany in its latest phases. But the key-note of the whole is education—and, in particular, that education which is the beginning and end of PRUSSIA'S system, and the secret of her greatness. The author has lifted the veil by which many points in this remarkable system are still covered, and allows us to look into all the secret springs and machinery at work. It is the first attempt ever made to embody these difficult subjects in the form of a novel deserving that name, and it is unquestionable that the author has achieved a signal success. It is doubtful whether we feel a stronger interest in the narrative itself, or in the treasures of knowledge and information which it imparts.

We have arranged to present this admirable work to our readers in monthly instalments. One of the first German scholars in this country has engaged to translate it for the

AMERICAN EDUCATIONAL MONTHLY. The first part we hope to give at an early day. We are assured that our plan will meet with general approbation.

MESSRS. ELDREDGE & BROTHER, Philadelphia, have published a very handsome volume, entitled "A Manual of Composition and Rhetoric: a Text-Book for Schools and Colleges." The author is JOHN S. HART, LL.D. We have no doubt of the success of the work, and shall hope to discuss its merits in a future number. The book contains 380 pages. Price \$1 50.

THE STUDENTS' MYTHOLOGY: a Compendium of Greek, Roman, Egyptian, Assyrian, Persian, Hindoo, Chinese, Tibetan, Scandinavian, Celtic, Aztec, and Peruvian Mythologies, arranged for the Use of Schools, by C. A. WHITE, has been published by W. J. WIDDLETON, New York. 315 pages. Price \$1 25.

MESSRS. DENNIS, BROTHERS & THORNE, Auburn, N.Y., send us a fair sample of book-making, entitled, "Day by Day: a Compilation from the Writings of Ancient and Modern Friends," by WILLIAM HENRY CHASE.

MESSRS. IVISON, BLAKEMAN, TAYLOR & CO. add to Robinson's Mathematical Series, "First Lessons in Mental and Written Arithmetic on the Objective Method." Edited by SAMUEL D. BARR. 180 pages. Price 40 cents.

MESSRS. HARPER & BROTHERS have just published "Recollections of Eton, by An Etonian," with numerous Illustrations, by SYDNEY P. HALL. Paper, 126 pages, price 50 cents. Also, "The Genial Showman, being Reminiscences of the Life of Artemus Ward." By EDWARD P. HINGSTON. Paper. Illustrated. 155 pages, price 75 cents. And, "Veronica: a Novel." Paper. 175 pages, price 50 cents.

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A schoolboy, being asked by his teacher how he should flog him, replied, "If you please, sir, I should like to have it on the Italian system of penmanship, the heavy strokes upwards and the down ones light."



*MISCELLANEA.*

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REV. PROFESSOR ANSON J. UPSON, of Hamilton College, is to become the successor of Dr. Sprague, at the Second Presbyterian Church, Albany.

PROF. ALBRIGHT, late of the Ohio Wesleyan Female College, Delaware, becomes president of Lewis University, Glasgow, Mo. Rev. D. A. McCready, late president, has been transferred to Pittsburg Conference.

MISS ELIZABETH ANN SWARTOUT, known widely as the founder of the Elmwood Seminary, at Glen's Falls, N. Y., died lately from starvation, in a Michigan insane asylum. Close application to study was the cause of her insanity, and she declined to take any food.

YALE COLLEGE has raised the salaries of tutors to \$1,500, and of professors to \$3,000 a year.

BOSTON expended \$1,600,993.53 on her public schools last year.

A TURKISH law school has been opened by the Grand Vizier with a speech, in which he declared that a new era had dawned for Turkey, and that the old practice of judging according to the Koran had to give way before modern ideas, and that a new civil code would in future govern the realm.

ALL the Freshmen class at Amherst College this year were conditioned on spelling. Forty-eight out of the eighty-three applications at West Point were rejected because they could not spell correctly.

JONES says he is about sick of seeing the improbable paragraph to the effect that eighty-three West Point applicants were rejected "because they could not spell correctly." He thinks that any average boy of the period could spell "correctly" if he were only careful to put two r's in it.

A GIRL in one of the Boston public schools applied to her teacher for leave to be absent half a day, on the plea that they had company at home. The teacher referred her to the printed list of reasons that the school committee think sufficient to justify absence, and asked her if her case came under any of them. She naively replied that it might come under the head of "domestic affliction."

AN English nobleman once sent his stupid son to Rowland Hill, in order that he might be educated, accompanied by a note, in which the father said of his hopeful son: "I am confident that he has talents, but they are hidden under a napkin." The eccentric but shrewd divine kept the youth a few weeks under his care, but then sent him back to his father with the following laconic message: "I have shaken the napkin at all corners, and find nothing in it."

FRED. DOUGLAS once said that you could no more silence a brawler by answering him than you could get the ding out of a brass kettle by beating it.

THE secrets of chemistry were well known in ancient times, for Queen Dido laid off the city of Carthage with an ox(h)ide.

BEAUTIFUL ANSWERS.—A pupil of the Abbe Sicord gave the following extraordinary answers:—"What is gratitude?" "Gratitude is the memory of the heart." "What is hope?" "Hope is the blossom of happiness." "What is the difference between hope and desire?" "Desire is a tree in leaf, hope is a tree in flower, and enjoyment is a tree in fruit."

THE fireside is a school of infinite importance; it is important because it is universal, and because the education it bestows being woven in with the woof of childhood gives form and color to the whole texture of life.

A TEACHER ANSWERED.—I was teaching in a quiet country village. The second morning of the session I found leisure to note my surroundings, and among the scanty furniture I espied a three-legged stool. "Is that the dunce-block?" I said to a little girl of five. The dark eyes sparkled, the curls nodded assent, and the lips rippled out, "I guess so; the teachers always sit on that!" The stool was unoccupied that term.

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ERRATA.—Article "English Literature," page 403, second line, for "philosophy," read *philology*; twenty-sixth line, for "Leibritz," read *Leibnitz*; page 407, for "Beourelf," read *Beowulf*; for "mendelark," thirteenth line, read *men delark*; twenty-sixth line, for "Erke," read *Eske*. Our worthy proof-reader has not had a summer vacation!

## SCIENTIFIC.

THE science of chemistry, although belonging to the exact sciences, is perhaps the most unsteady of all. Its very principles seem almost always in a feverish state of transition. What was true yesterday is to-day considered as a fable; and to-day's truth will be scorned to-morrow. For sometime the theory of the "Nascent State" played a great role in this science. We understand by it the hypothesis that a body in the moment it leaves a certain combination has qualities different from those in its ordinary state. This whole hypothesis has recently been thoroughly refuted by Delille in the "*Comptes Rendus*." Our hand-books of chemistry will require another overhauling.

THE astronomers of the Greenwich Observatory, England, have been measuring the heat of the stars. Arcturus and Vega have been the ones especially dealt with. It is found that the former, which shines with a ruddy, yellow light, sends about twice the heat of the latter, whose gleam is like the gleam of polished steel, while the quantity is of course exceedingly minute in either case. The heat received from Arcturus, for example, is sensibly the same as that from the face of a three-inch iron cube full of boiling water at a distance of 383 yards.

EARTH houses, or rather dwellings in the earth, are of very ancient origin. They exist in many northern countries. Numbers of them have been discovered at different periods in Ireland, England, and Scotland. They were used as places of safety or refuge, to which the early inhabitants could retire, carrying with them their provisions and effects. In the Irish language they were called *Caisttallamh*; in Icelandic *Jardur*—meaning in both tongues earth houses. Behold the epitome of architectural history—from Cave to Castle, from Excavation to *Building*.

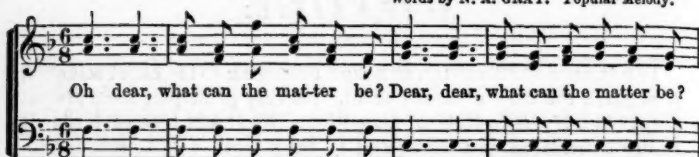
THE hardness of metals may now be ascertained by aid of an instrument invented by a French engineer. It consists of a drill, turned by a machine of a certain uniform strength. The instrument indicates the number of revolutions made by the drill. From this compared with the length of bore-hole produced, the hardness of the metal is estimated. It is said that a great proportion of the rails now employed in France are tested by this instrument.

At a recent meeting of the Academy of Sciences, M. Prillieux explained that icicles existed in the interior of all frozen plants. These icicles form small columns, perpendicular to the surface, and often penetrating the epidermis. The ice is formed from liquids derived from the cells. The cells, however, remain intact; so that there is no destruction.

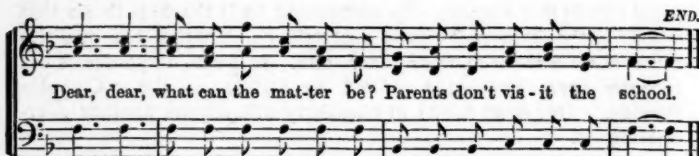
# WHY DON'T PARENTS VISIT THE SCHOOL?

From "THE DIADDEM OF SCHOOL SONGS," by Professor WILLIAM TILLINGHAST.

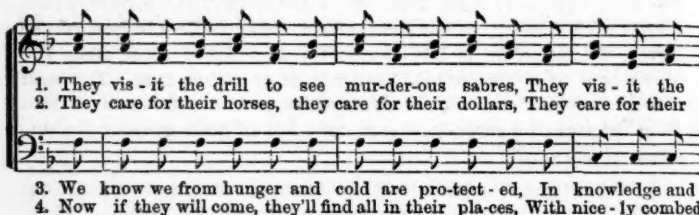
Words by N. A. GRAY. Popular Melody.



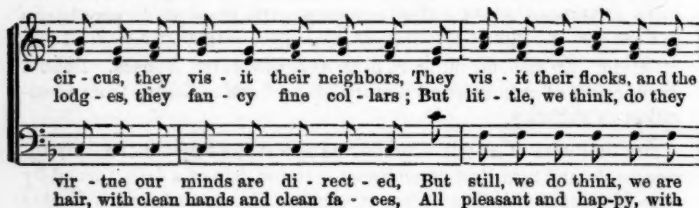
Oh dear, what can the mat-ter be? Dear, dear, what can the matter be?



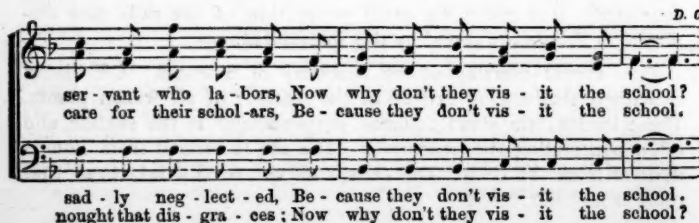
Dear, dear, what can the mat-ter be? Parents don't vis - it the school. END.



1. They vis - it the drill to see mur-der-ous sabres, They vis - it the  
2. They care for their horses, they care for their dollars, They care for their  
3. We know we from hunger and cold are pro-tect - ed, In knowledge and  
4. Now if they will come, they'll find all in their pla-ces, With nice - ly combed



cir - cus, they vis - it their neighbors, They vis - it their flocks, and the  
lodg - es, they fan - cy fine col - lars; But lit - tle, we think, do they  
vir - tue our minds are di - rect - ed, But still, we do think, we are  
hair, with clean hands and clean fa - ces, All pleasant and hap-py, with



ser - vant who la - bors, Now why don't they vis - it the school?  
care for their schol - ars, Be - cause they don't vis - it the school.  
sad - ly neg - lect - ed, Be - cause they don't vis - it the school.  
nought that dis - gra - ces; Now why don't they vis - it the school?